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Modified FORM PTO-1390 (REV 11-98) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARY OFFICE ATTORNEY'S DOCKET NUMBER ACE-1001 TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) U.S. APPLICATION NO. (If known, see 37 CFR 1.5) CONCERNING A FILING UNDER 35 U.S.C. 371 INTERNATIONAL APPLICATION NO. INTERNATIONAL FILING DATE PRIORITY DATE CLAIMED PCT/JP00/02771. 27 April 2000 -07 May 1999 TITLE OF INVENTION PET BOTTLE APPLICANT(S) FOR DO/EO/US Chisato HIRATA Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information: This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in (35 U.S.C. 371(b) and PCT Articles 22 and 39(1). A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date. A copy of the International Application as filed (35 U.S.C. 371(c)(2)) is transmitted herewith (required only if not transmitted by the International Bureau). has been transmitted by the International Bureau. is not required, as the application was filed in the United States Receiving Office (RO/US). A translation of the International Application into English (35 U.S.C. 371(c)(2)). Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) are transmitted herewith (required only if not transmitted by the International Bureau). have been transmitted by the International Bureau. have not been made; however, the time limit for making such amendments has NOT expired. have not been made and will not be made. A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). 10. A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). Items 11. to 16. below concern document(s) or information included: An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 12. An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. A FIRST preliminary amendment. A SECOND or SUBSEQUENT preliminary amendment. 14. A substitute specification. 15. A change of power of attorney and/or address letter. 16. Other items or information: RETURN POSTCARD

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PET BOTTLE

[Technical Field]

[Background Art]

Conventionally, a PET bottle for containing a soft drink consists of a bottle main body made of a thermoplastic resin and a cap detachably attached to a mouth portion of the bottle main body. As disclosed in JP-A-7-205258, the bottle main body is provided with decompression panels for avoiding deformation, fracture and the like of the bottle main body following compression and decompression inside the bottle main body.

The bottle main body is generally molded as follows. A polyethylene terephthalate resin material is injected to form a preform of a test tube shape. The preform includes a mouth portion having a support ring and a male screw formed on its open-end side.

The mouth portion is subject to whitening crystallization by appropriate means to make it less likely that deformation due to heat or the like occurs. The lower portion of the preform other than the mouth portion is heated by heating means such as an infrared ray lamp. Next, the heated preform is placed in blow molds of predetermined shapes and inflated in the circumference direction by blowing pressurized air into the preform while being extended

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in the longitudinal direction by a stretch rod to form a bottle main body of a shape along the internal surface shapes of the blow molds.

The bottle main body molded by a so-called biaxial stretching blow molding as described above is filled with a heat-sterilized drink from the mouth portion at a drink filling chamber and a sterilized cap is attached to the mouth portion to complete a PET bottle. Although the inside of the PET bottle is decompressed when a temperature of the heat-sterilized drink falls, since the decompression panels are deformed, deformation and fracture of the bottle main body can be avoided. Further, the decompression panels are made of recessed portions.

Since the bottle main body of the conventional PET bottle is formed in an extremely simple cylindrical or rectangular parallelepiped shape having the decompression panels provided on the entire surface, there is a problem in that it lacks fun and is immediately thrown away when the soft drink inside is consumed. In addition, since any conventional bottle has almost the same external shape regardless of goods, there is a problem in that consumer eagerness to purchase cannot be aroused by the external shape.

[Disclosure of the Invention]

The present invention has been devised in view of the above-mentioned problems, and it is an object of the present invention

to provide a PET bottle of an unknown and new structure in which a bottle main body is divided into a base portion and an ornamental portion and decompression panels are provided on the base portion side, the ornamental portion can be formed in various characteristic shapes, and which can arouse consumer eagerness to purchase by the ornamental portion.

A PET bottle in accordance with the first claim of the present invention has the following means in order to attain the above-mentioned object.

- (a) a bottle main body and a cap that is detachably attached to a mouth portion of the bottle main body.
- (b) wherein the bottle main body is made of a thermoplastic resin and consists of a base portion and an ornamental portion.
- (C) wherein the base portion is provided with decompression panels for avoiding deformation, fracture and the like of the bottle main body following compression/decompression inside the bottle main body.

A PET bottle in accordance with the second claim of the present invention has the ornamental portion formed in an animal or a human shape in addition to the above-mentioned means.

A PET bottle in accordance with the third claim of the present invention has the cap formed in a hat shape in addition to the above-mentioned means.

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[Brief Description of the Drawings]

Fig. 1 is an overall perspective view showing an embodiment of a PET bottle in accordance with the present invention;

Fig. 2 is a side view of Fig. 1;

Fig. 3 is a front view of Fig. 1;.

Fig. 4 is a plan view of Fig. 1;

Fig. 5 is an X-X sectional view of Fig. 3;

Fig. 6 is a front view showing a manufacturing step;

Fig. 7 is a sectional view showing a manufacturing step;

Fig. 8 is a sectional view showing a manufacturing step;

Fig. 9 is an overall perspective view showing another embodiment of the PET bottle in accordance with the present invention;

Fig. 10 is a perspective view showing a form of a cap;

Fig. 11 is a sectional side view of Fig. 10;

Fig. 12 is an overall perspective view showing a state in which the cap of Fig. 10 is used; and

Fig. 13 is a side sectional view of Fig. 12.

[Best Mode for carrying out the Invention]

Embodiments of the present invention will be described based on Figs. 1 to 13. Fig. 1 is an overall perspective view showing an embodiment of a PET bottle in accordance with the present invention. Fig. 2 is a side view of Fig. 1. Fig. 3 is a front view of Fig. 1. Fig. 4 is a plan view of Fig. 1. Fig. 5 is an X-X sectional

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view of Fig. 3. Fig. 6 is a front view showing a manufacturing step. Figs. 7 and 8 are sectional views showing manufacturing steps. Fig. 9 is an overall perspective view showing another embodiment of the PET bottle in accordance with the present invention. Fig. 10 is a perspective view showing one form of a cap. Fig. 11 is a sectional side view of Fig. 10. Fig. 12 is an overall perspective view showing a state in which the cap of Fig. 10 is used. Fig. 13 is a side sectional view of Fig. 12.

A PET bottle 1 in accordance with the first claim of the present invention consists of a bottle main body 2 and a cap 21 that is detachably attached to a mouth portion 16 of the bottle main body 2. The bottle main body 2 is made of a thermoplastic resin, more specifically, a polyethylene terephthalate resin, and consists of a base portion 3 of a bottomed cylinder shape and an ornamental portion 10 above the base portion 3. The base portion 3 is provided with a plurality of compression panels 5 for avoiding deformation, fracture and the like of the bottle main body 2 following compression/decompression inside the bottle main body 2. The decompression panels 5 are made of elliptic recessed portions 6. Further, the shape of the recessed portions is not specifically limited and they can be rectangular recessed portions 7 as shown in Fig. 9.

The ornamental portion 10 is formed in an animal shape, on which a head portion 11, a torso portion 12, arm portions 13 and

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leg portions 15 are formed. The mouth portion 16 is formed at the top of the head portion 11. A support ring 17 and a male screw 19 above the support ring 17 are formed at the mouth portion 16. The cap 21 is detachably screwed onto the male screw 19 of the mouth portion 16.

The bottle main body 2 is formed as follows. A polyethylene terephthalate resin material is injected by an injection apparatus to form a preform 22 of a test tube shape. The preform 22 includes the mouth portion 16 having the support ring 17 and the male screw 19 formed on its open-end side. The mouth portion 16 is subject to whitening crystallization by appropriate means to make it less likely that deformation due to heat or the like occurs.

The lower portion of the preform 22 other than the mouth portion 16 is heated by heating means such as an infrared ray lamp. Next, the heated preform 22 is placed in blow molds 29 and 30 of predetermined shapes and inflated in the circumference direction by blowing pressurized air in the preform 22 while being extended in the longitudinal direction by a stretch rod 31 to form the bottle main body 2 of a shape along the internal surface shapes of the blow molds. The blow mold 30 consists of a front mold 32 and a rear mold 33 to be joined with the front mold 32 and has recessed portions, which form the outline of the base portion 3 and the outline of ornamental portion 10, formed on its internal surface.

The bottle main body 2 molded by a so-called biaxial stretching

blow molding as described above is filled with a heat-sterilized drink from the mouth portion 16 in a drink filling chamber and a sterilized cap 21 is screwed onto the male screw 19 of the mouth portion 16 to complete the PET bottle 1. Although the inside of the PET bottle 1 is decompressed when a temperature of the heat-sterilized drink falls, since the decompression panels 5 are deformed, deformation and failure of the bottle main body 2 can be avoided.

Since the PET bottle 1 is provided with the decompression panels 5 intensively around the base portion 2 as described above, it is not necessary to provide the decompression panels 5 on the ornamental portion 10, whereby the ornamental portion 10 can be molded at will. With the ornamental portion 10, a characteristic is given to a form unlike the conventional PET bottle of a simple shape, which makes it easy to distinguish goods from other goods by an external shape, and consumer eagerness to purchase is aroused by the ornamental portion 10.

In addition, since the PET bottle 1 has a shape in which the ornamental portion 10 is mounted on the base portion 3, there is an effect in that it can be used as an ornament with the base portion 3 as a pedestal and can also be used as a flower vase or a paper weight with water in the bottle main body 2 even after a soft drink in the bottle main body 2 is consumed. In addition, if a shape of the base portion 3 is adapted to a standard of an ordinary PET bottle,

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since the base portion 3 can be manufactured in a conventional manufacturing line, it is not necessary to provide a new manufacturing line. In addition, the base portion 3 can be easily grasped when filling it with a drink. Moreover, if the ornamental portion 10 is formed not to exceed the external circumference of the base portion 3, the PET bottles 1 can be housed uniformly at an equal interval in a conventional case for transporting PET bottles without leaning to one side. Furthermore, since the ornamental portions 10 do not contact each other, they are not damaged.

Further, although the ornamental portion 10 is formed in an animal shape, it is not limited to the shape and can be modified in various shapes such as a human shape, an automobile shape and a rocket shape. If the ornamental portion 10 is formed in an animal shape, a human shape or the like, it particularly stimulates eagerness to purchase of children and the PET bottle 1 can be used as a toy after a soft drink is consumed.

In addition, as shown in Figs. 10 and 11, a cap can be formed in a hat shape. The cap 24 is provided with a cylindrical cap main body 25, a brim portion 26 formed in the lower periphery of the main body 25, a female screw portion 27 to be screwed onto the male screw portion 19 of the mouth portion 16 and a recessed portion 28 for containing the support ring 17. When the female screw portion 27 of the cap 24 is screwed onto the male screw portion 19 of the mouth portion 16 of the bottle main body 2, the entire mouth portion

16 is housed in the cap 24 to form a shape as if a hat is put on the head portion 11 of the ornamental portion 10 formed in an animal shape, and thus the PET bottle can be used as an ornament.

As described above, since the PET bottle according to the first claim of the present invention is provided with decompression panels centering around a base portion, there is an effect in that it becomes unnecessary to provide decompression panels on an ornamental portion, whereby the ornamental portion can be molded at will. In addition, since an ornamental portion is molded, there is also an effect in that a characteristic is given to a form unlike the conventional PET bottle of a simple shape, which makes it easy to distinguish goods from other goods by an external shape, and consumer eagerness to purchase is aroused by the ornamental portion.

Moreover, even after a soft drink in a bottle main body is consumed, since the PET bottle according to the first aspect of the present invention has a shape in which an ornamental portion is mounted on a base portion, there is an effect in that it can be used as an ornament with the base portion as a pedestal and can also be used as a flower vase or a paper weight with water in the bottle main body. In addition, if a shape of a base portion is adapted to a standard of an ordinary PET bottle, since the base portion can be manufactured in a conventional manufacturing line, there is an effect in that it is not necessary to provide a new manufacturing line. In addition, there is also an effect in that the base portion

can be easily grasped when filling it with a drink. Moreover, if an ornamental portion is formed not to exceed an external circumference of a base portion, there is an effect in that the PET bottles can be housed uniformly at an equal interval in a conventional case for transporting PET bottles without leaning to one side. Furthermore, since ornamental portions do not contact each other, there is also an effect in that they are not damaged.

Since the PET bottle according to the second claim of the present invention is formed in an animal shape, there is an effect in that it particularly stimulates eagerness to purchase of children and can be used as a toy after a soft drink is consumed.

Since the PET bottle according to the third claim of the present invention has a cap formed in a hat shape, there is an effect in that it can take a form in which an ornamental portion such as an animal or a doll wears a hat and, as a whole, becomes an ornament.

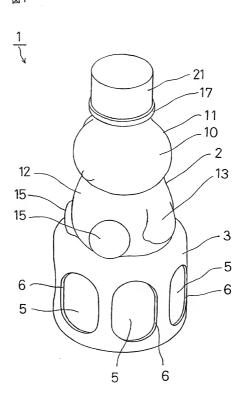
[Industrial Applicability]

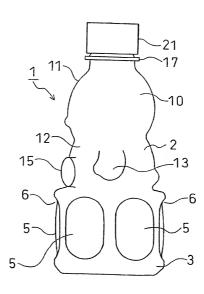
The present invention is suitable for a PET bottle for containing a soft drink such as juice, tea and mineral water.

Claims

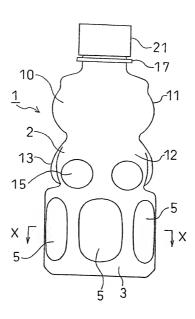
- 1. A PET bottle comprising:
- (a) a bottle main body and a cap that is detachably attached 5 to a mouth portion of the bottle main body;
 - (b) wherein the bottle main body is made of a thermoplastic resin and consists of a base portion and an ornamental portion; and
 - (c) wherein the base portion is provided with decompression panels for avoiding deformation, fracture and the like of the bottle main body following compression/decompression inside the bottle main body.
 - A PET bottle according to claim 1, wherein the ornamental portion is formed in an animal or a human shape.
 - 3. A PET bottle according to claim ${\bf 1}$ or ${\bf 2}$, wherein the cap is formed in a hat shape.

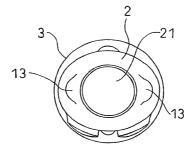


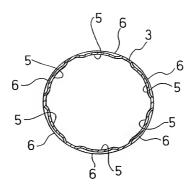


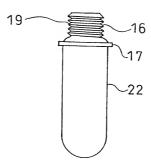


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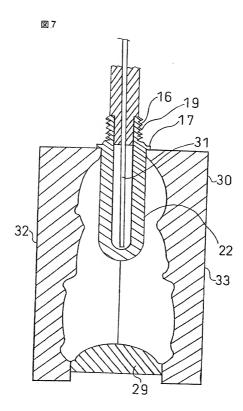
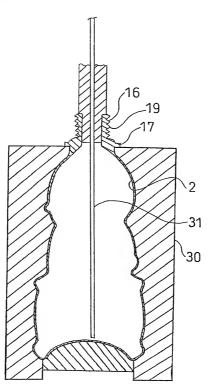


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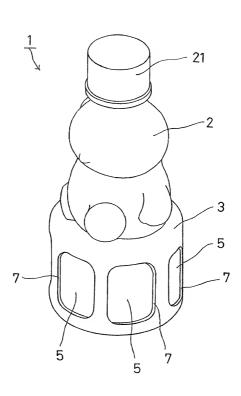
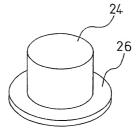


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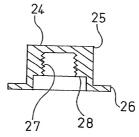


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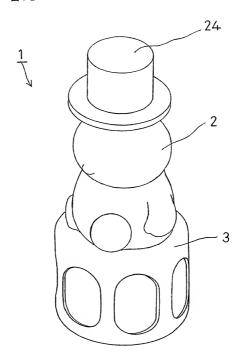
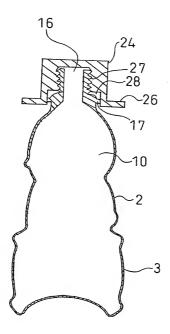


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Declaration and Power of Attorney for Patent Application

及び委任状
ge Declaration
言書
As a below named invertor, I hereby declare that
My residence post office address and citizenship are as stated next to my name.
I believe I am the organsi, first and sole inventor (if only one name is lated below) or an organsi, first and joint inventor (if shall names are fisted below) of the subject matter which is claimed and for which a patent is sought on the invention entitled Pet Bottle
the specification of which is attached hereto unless the following box is checked:
83 was flood on 27/04/00 so United States Application Number or PCT international Application, Number of PCT / 1P00/0277 fast was amended on (if applicable)
I hereby state that I have reviewed and understand the contents or the above identified specification, reluding the claims, as amended by any amendment referred to above.
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Japanese Language Declaration (日本語宣言書)

私は、米田県県第35種119条(a)-(d) 項又は365条(b) 郊に基さ下記の、米国以外の回の少なくとも一当地本制にしている特許協力条約365(a) 郊に基ずく国原出額、又は外国での特許出額もしくは契明が領の出額についての外国を発性をことに、優先権を表した。優先権を表した。優先権を表した。

Prior Foreign Application(s) 外国での先行出版

(Number)	(Country)
(番号)	(国名)
(Number)	(Country)
(番号)	(国名)

私に、第35編米国法典119条(e)項に基いて下記の米 国特許出額規定に記載された権利をここに主張いたします。

(Application No.) (Filing Date) (出順番号) (出順日)

私は、下記の米国法典第35編120条に基いて下記の米国時許出版に記載された権利。又は米国を指定している特許協力系的365条(c)に基づく権利をここに主張します。 た、木田郎の各議水範囲の内容が米国法典第35編112条 第1項又は特品分裂ので現金された方法で元行る米国時 前1項以降市場に開示されていない限り、その左行米国時間意場日ま 以降で本出期部の日本国内または特計協力条句區域出日 の原間中に入手された。達成則法典第37編1条56 で定義された特計等の有無に関する重要な情報について開 示論務があることを認識しています。

(Application No.) (Filing Date) (出版音号) (出版日)

(Application No.) (Filing Date) (出版合号) (出版日)

私は、私料弁の知識に番引いて本宣言書中で私が行なう表 明が真実であり、かつ起の大土に情謝を私の付にるところ に基すく要例が金て真実であると傾していること、さちに故 窓になされた虚偽の要明及びそれと同今の行為は実施 18 編第10日条に基ずる、耐金または特殊、もしくは の同方により処罰されること、そしてそのような故意による 成偽の声明を行なえば、出制した、又は既に許可された特別 の行効性が失われることを認識し、よってここにト記のごと く智警を私とす。 I hereby claim foreign priority under Title 35, United States Code, Section 119 (a)-(d) or 385(b) of any foreign application(s) for patient or Inventor's certificate, or 385(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Not Claimed 優先権主張なし

(Day/Month/Year Filed) (出版年月日)	0
(Day/Month/Year Filed) (出願年月日)	0

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

(Application No.) (Filing Date) (出顧音)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.58 which became available between the filling date of the prior application and the national or PCT International filing date of application and the national or PCT International filing date of application and the national or PCT International filing date of application.

(Status: Patented, Pending, Abandoned) (現況: 特許許可濟、採匯中、放棄済) (Status: Patented, Pending, Abandoned) (現況: 特許許可濟、採属中、放棄済)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Japanese Language Declaration (日本語宣言書)

委託状: 私は下記の発明者として、本出願に関する一切の 予適をを米特許期隔局に対して遂行する弁理上または代理人 として、下記の者を指名いたします。(弁護上・または代理 人の氏名及び登録番号を明記のこと)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith (list name and registration number)



MITCHELL P. BROOK, Reg. No. 32,967, DAVID I. ROCHE, Reg. No. 30,267, ANTOINETTE F. KONSKI, Reg. No. 34,202, MOSES MARES, Reg. No. 40,716, LÖHN G. FLAIM, Reg. No. 37,323, all attorneys with the firm of BAKER & McKENZIE, which has an office address at 101 West Broadway, San Diego, ICA 92101.

書類送付先

TOPOLL" CASSOOL

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San Diego, California 92101-3890

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Direct Telephone Calls to: (name and telephone number)

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(第三以降の共同発明者についても同様に記載し、署名をすること)

(Supply similar information and signature for third and subsequent joint inventors.)